

## High-definition electrocardiography potential in identifying the reasons for unstable clinical course of coronary heart disease

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### Abstract

**Aim:** To investigate the correlation between clinical and morphological characteristics of coronary heart disease (CHD) and high-definition electrocardiography (HD-ECG) parameters. **Material and methods:** In total, 85 patients with unstable angina and ST segment depression (ST-UA) underwent HD-ECG during the angina attack, with late ventricular potential (LVP) analysis. One-year survival data were also analysed. Post-mortem histological examination of cardiac tissue was performed in 6 patients with ST-UA. **Results:** The important morphologic features of ST-UA included cardiomyocyte (CMC) dystrophy, due to acute and chronic myocardial ischemia, and acute injury in the cardiac conduction areas. LVPs were registered in 27 % of the ST-UA patients, mostly among people with transient myocardial ischemia (69,57 %). In patients who previously underwent myocardial infarction, LVP prevalence was lower (28,57 %). At the early stages of hospitalization, LVP were registered in 14 patients (60,87 %), while pharmacotherapy and clinical course stabilization were associated with decreased LVP prevalence (21,74 %). The study results suggest that in patients with acute coronary syndrome, LVP registration predicts not an adverse outcome, but a better prognosis. **Conclusion:** ST-UA is characterised by typical changes of CMC and myocardial stroma in posterior septal area, which result in metabolic, energetic, and electrical myocardial instability. LVPs could be used as a marker of functional (ischemic) myocardial heterogeneity in patients with ST-UA. LVP registration could be associated with a better prognosis in this clinical group.

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### Keywords

High-definition electrocardiography, Late ventricular potentials, ST segment depression, Unstable angina